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CENTRAL INTELLIGENCE AGENCY

INFORMATION REPORT

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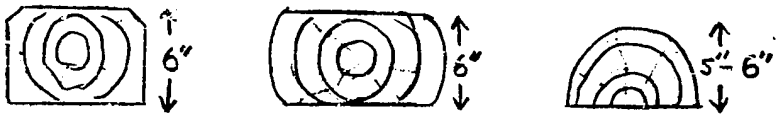
Materials Used in Railroad Construction:

1. Ties --



Length: 2.6 meters up to 2.7 meters
Approximately 6'-6" for most track ties.
Switch tie lengths varied to suit the switch layout. Most of the ties were of pine; a secondary choice was fir. For testing purposes we tried reinforced-concrete ties, but had no success with them. During the war years from 1941 to 1944, the Germans brought in steel ties which were used mainly in station trackage. We had a normal supply of all wood ties, through our local saw mills. Beginning in 1930, about 80 per cent of all ties were treated by a special asphalt-tar. This was called a treating oil for wood and was prepared from the natural oil stone (Põlevkivi). This treatment preparation was manufactured in factories in the Kivioli Kohtla from material obtained from mines in northern Estonia. A small portion of ties were also treated with sulphate salts. Treated ties on main lines lasted about 10 to 15 years; untreated ties lasted about three to five years. Ties removed from mainlines were reused on secondary lines, station tracks, factory tracks or spurs, or for temporary building purposes. The factory which treated ties was located in Walga. This plant also treated poles for electric and telephone lines.

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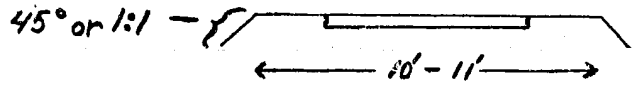
2. Ballast consisted of 99 per cent natural gravel, with one per cent additional sand mixed in.

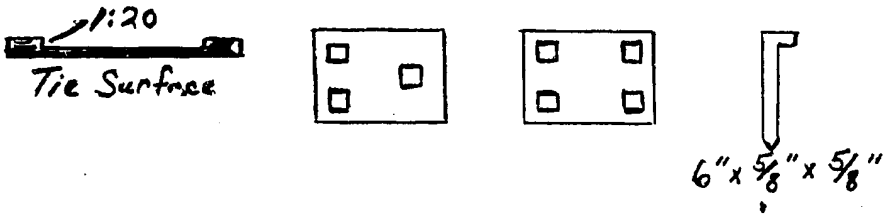


Depth was from 10 to 12 inches and width from 10 to 11 feet. The supply was adequate through railroad-owned gravel pits. The outstanding pits were at Paldiski, Nõmme and at Kabala. Part of the gravel from the former was screened and used for building purposes -- concrete work, plastering, and mortar. The Kabala gravel pit contained traces of clay. Other important gravel pits were Pedja, Võru, and Puravitsa (near Lepassaare). There were others, but the five mentioned were the most important. Surface of the ballast on main tracks consisted of screened split-rock. In general, the ballast was poorly drained. During freezing weather rails had to be elevated on wooden blocks 1" x 2" x 4" in order to level the ties which had been raised by frost. During severe weather ballast would freeze solid. During this time, railroad breaks occurred more often than in the summertime. The raising of main track railroad lines which had been washed out or on which the ballast had settled required many months of work. Special trains for this specific purpose were run every summer.

3. About 90 per cent of all rails were of the Soviet-type I-A, II-A, and III-A. Most of the rails were III-A and were of the same size as the #6 German rail, which was about 33 kg per meter. Side tracks used a light weight German rail #2. The Walga-Pihkva (Pleskau) railroad line was rebuilt with the German #6 type rail (33.4 kg per meter) and also with the #8 (41 kg per meter) and the X (43.9 kg per meter.) This railroad line was actually in the best condition of all Estonian lines and it had the best accessories and signals. All new rails were bought in Germany, France, and Belgium and were rolled to specification to match the Soviet-type rails in existance.

Rail Accessories:

4. Flat tie-plates: The tie surface was cut 1:20 scope [sic] at the place where the plate was to be fitted. Most of the spikes were 5/8" square x 6" and most of the tie-plates used three such spikes (some were four-spike plates). Screw-spikes were used mainly for switches and on main lines.



Screw spike: The Head - 20 mm x 5/8" x 5"6" or 7"
5" 6" 7" Long.

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The Walga-Voru-Petseri-Irboska line had screw-spikes throughout its length.
Rail-Connecting Plates:

3/4" Bolts
About 2 to 3 for each side.

5. Frogs and Switches were mostly of the standard Soviet-type: Frog Angle Tan 1:9 to 1:11 mostly 1:9. Switch rails were mostly the straight French-type as were the switches However, during World War II many switches were replaced by German-type switches;

6d 1:9 R-190
8a 1:9 R-190

Most of the new switches were bought in Germany and France, however, some switches were built and rebuilt in Estonian railroad factories and repair shops.

6. Most signals were hand-operated (pulley and pull wire system) and were in poor condition. During the German occupation a replacement from old German-stock took place. Only Tallinn had electric light signals, and the Nõmme main switches were operated electrically from a control tower. The Germans built two mechanically operated control towers in Walga, using a standard German control system (Stellwerk). Nearly all the signals had to be lighted manually, using petroleum lanterns. Main signals were set on the right side of the track and were red and green. Switch lanterns were milky white. Practically all Estonian signals were changed to the standard German signal code between stations. Some stations on the Tallinn-Narva line and the Tapa-Walga had special safety devices by which a train could not be dispatched before an acceptance from the next station was received. All railroad lines were single-tracked with the exception of the Tallinn-Pääskülа. This double-tracked line was for local passenger service only.

7. Methods for railroad track and bridge construction employed a few small cranes and manual labor. Track laying and maintenance tools were similar to those used for any type of manual labor, for example: there were no mechanically powered shovels, air compressors, or bulldozers. In 1941, the Soviets burned and destroyed all equipment which they could not take with them. In 1944, the retreating Germans did the same thing. It is difficult to say, therefore, what is left.

8. New bridges and rebuilt bridges constructed during the German occupation were built to standard railroad norms. Most rebuilt bridges were of the temporary-type. All existing bridges were destroyed twice -- by the Soviets and by the Germans. During the years 1941 to 1944 there was an acute shortage of skilled railroad men because of war action and deportation to Soviet slave camps.

9. German methods in railroad bridge and track construction were far superior and better organized than any methods which Estonia had or which the Soviets brought in. The Soviets brought in no railroad stock or machinery, although they claimed that they had better equipment, labor, and material than the Estonians or the Germans had. They contradicted themselves because all of our better locomotives, Diesel cars, and freight cars disappeared. We heard later that this equipment was in use in USSR. The only piece of equipment which the Soviets had of any value for railroad maintenance was a small manually operated car which would register track smoothness on graph paper. In general, the Soviets did very little construction work during their two occupation periods.

10. Retired rails, as well as other material from main lines, were used for building secondary tracks, reinforcing small concrete bridges, and other building purposes. The 42 normal gauge rails were reused on 750 mm small gauge lines.

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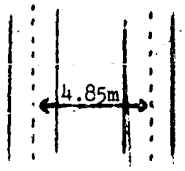
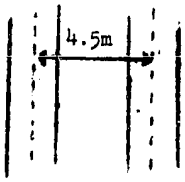
11. Normal space between double-track lines and between tracks in yards was wider under Soviet methods because of track-gauge differences and wider cars (89 mm wider). The tonnage of box cars was about the same for both German and Russian.



Minimum distance from center of track to center of track within yards by Soviet method used in Estonia was 4.85 meters. If a signal or light pole stood between tracks, the distance from center to center was increased to 5.8 meters.

German requirements called for a freight and track clearance of 2.5 meters on main lines and 2.2 meters at stations. Soviet requirements required about 4 inches more on each side.



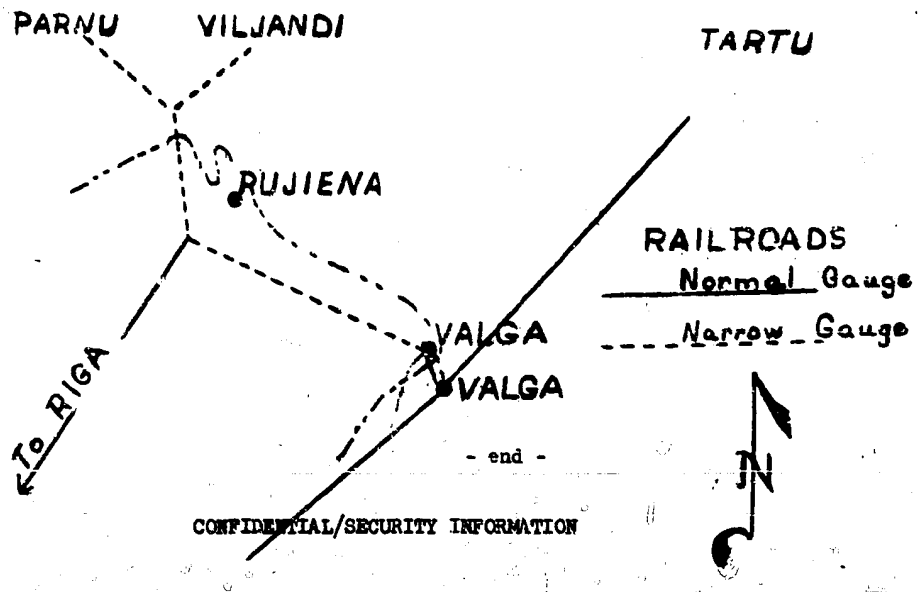
Distance between tracks in yards or stations by German method was 4.5 meters. This space was 5.26 meters on main lines.

12. [redacted] the railroad gauge was still 4'8½" (1435 mm). It can be assumed that the 1435 mm gauge has not been changed to 1524 mm. All Estonian railroad stock at one time was changed from the wide Soviet gauge to standard European 1435 mm gauge. Soviet rolling stock had the wheel axle narrowed. Changing track gauge back to the 1524 mm would not take too much effort or expense. I have heard that there was actually a trend to change trackage back to the 1524 mm width and if that is the case, then there would be much expense involved in changing rolling stock too.

25X1

13. The narrow gauge railroad on the German-Osland from Johwi to north of Vihtse (Jaama) was used primarily to transport workers to and from the oil factories. I can only guess that it is now in operation.

14. Between Estonian-Valga and Latvian-Valga there was a normal gauge line along side a narrow gauge line. Later a separate 1435 mm gauge track was laid between the two border towns.



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